REMARKS

Claims 1-13 were previously canceled. Claims 24-26 have been canceled without prejudice in this amendment. Claims 27-29 have been added. No claims have been amended. With entry of this amendment, claims 14-23 and 27-19 will be pending.

A new abstract has been submitted herewith on a separate sheet, in response to the Examiner's objection. Support for the new abstract can be found, *inter alia*, on page 1, lines 5 to 11 of the application as filed together with page 4, line 37 and former claim 1 as filed.

Claims 24-26 have been canceled in response to the rejection under 35 U.S.C. § 101. New method claims 27-29 have been added.

Claims 14-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,132,691 issued to Ejk and U.S. Patent No. 4,060,508 issued to Sugahara.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Ejk discloses a combination of a polar lubricant, such as an oxidized polyethylene wax, and an oxide or hydroxide of specified elements, which in combination purportedly improves the processibility of rigid vinyl chloride polymers and imparts a high level of heat stability. The Examiner contends that Ejk specifies the claimed calcium oxide or hydroxide at column 4, lines 4 and 5 and the zinc stabilizer ingredient at column 3, line 40. Applicant respectfully submits that when the specification is properly taken as a whole, its teachings stand in contrast to the Examiner's contentions.

In column 3, lines 36 to 43, a general statement about the use of carboxylic acid salts of calcium and barium as heat stabilizers is described:

> Other classes of compounds which have been used as heat stabilizers for vinyl chloride polymers are salts of carboxylic acids containing from 8 to about 20 carbon atoms with alkaline earth metals, particularly calcium and barium. These salts can be used alone or in combination with salts of the same carboxylic acids and elements from group IIb of the periodic table, particularly zinc and cadmium.

Apart from this general statement, there is no clear and unambiguous teaching to use a carboxylic acid salt of zinc. Moreover, Ejk only teaches using a zinc carboxylate (if at all) in combination with a calcium or barium carboxylate. The use of zinc carboxylate without one of the former compounds is not taught by Ejk.

Taking into consideration the disclosure in column 4, lines 3 to 12, however, the skilled person would have avoided using zinc in the stabilizers taught by Ejk. More particularly, column 4, line 7 discloses the following: "The oxides of zinc and lead are not suitable, since they adversely affect the heat stability of vinyl chloride polymers, and would therefore not be useful at the levels required to obtain the improved stability that characterize the present lubricant compositions."

Consequently, Applicant respectfully submits that the following picture would emerge, when one of ordinary skill in the art takes the disclosures in column 3 and column 4 into consideration. The skilled person is taught that a zinc or cadmium carboxylate may, but need not, be generally admixed with calcium and barium carboxylates. Again, there is no teaching or suggestion to use zinc carboxylates when calcium and barium carboxylates are not used. In other words, if no calcium or barium carboxylate is used, the use of zinc carboxylate obviously does not suggest any improvement of heat stability according to this disclosure. Column 4, however, suggests to the skilled person that zinc has a detrimental effect on the heat stability of vinyl chloride polymers. As a result, the skilled person would try to avoid the use of zinc salts together with organic tin stabilizers and calcium hydroxide. In conclusion, Ejk actually teaches away from using zinc salts in stabilizers.

As a confirmation of these findings, example 5 clearly illustrates this detrimental effect. Example 15 (bottom table in column 8) relates to the use of zinc oxide in the stabilizer combinations described by Ejk. According to the second table of column 9, the use of zinc oxide not only shows no positive effect with regard to stabilization but rather seems to have a detrimental effect on the stabilizing functions of the other compounds. In column 9, lines 25 to 31 Ejk teaches that the premature discoloration observed with zinc oxide is characteristic of zinc compounds in vinyl chloride polymer formulations.

Thus, Applicant respectfully submits that Ejk, taken alone, does not render the claimed subject matter obvious since Ejk teaches away from and teaches avoiding using zinc compounds in stabilizer compositions containing organic tin stabilizers. Again, Ejk suggests that using zinc results in premature discoloration

Sugahara discloses a stabilizer composition for chlorine-containing polymers having

a reduced tendency to blow at the molding step. The stabilizer comprises an inorganic silicate or composites of silicate acid with oxides, hydroxides and carbonates of metals of groups II and IV and an organic additive. The inorganic stabilizer should have a powder volume of at least 0.5 cc/g. The Examiner contends that Sugahara suggests the utilization of calcium oxide and hydroxide at column 9, lines 35 to 40.

Column 9 of Sugahara discloses the synthesis of metal silicates. More particularly, Sugahara discloses that metal silicates can be prepared by

> using as the starting silicic acid component a silicic acid-rich natural mineral or clay, a purified product thereof or a mineral silicate or clay acid-treated or alkali-treated under preferred conditions, mixing such silicic acid component with an oxide, hydroxide or carbonate of an alkaline earth metal at a suitable mixing ratio, reacting them according to a known dry or wet pulverizing mixing method, if necessary under heating, calcining the reaction product, if necessary, at 60° to 1000° C, and pulverizing and sieving the product.

Col. 9, lines 21-32.

After this reaction, however, the alkaline earth metal oxide or hydroxide is consumed and thus no longer in the mixture.

Thus, Applicant respectfully submits that Sugahara does not suggest the utilization of calcium oxide and hydroxide. Consequently, Sugahara does not teach or suggest, among other things, a stabilizer combination comprising calcium oxide and/or calcium hydroxide as claimed.

With regard to the organotin compounds, Sugahara discloses that they may be employed as part of one or more of other organic stabilizer compounds. Further types of stabilizer compounds are suggested, namely, nitrogen compounds, phosphorus compounds, sulfur compounds, organotin compounds and metal soaps. Apart from the fact that the addition of organotin compounds is purely optional, the skilled person would also have no reasonable expectation of success with regard to obtaining an unexpectedly improved stabilizer composition.

Thus, Sugahara, taken alone, does not teach a stabilizer composition containing calcium oxide or calcium hydroxide. Furthermore, Sugahara does not give a hint with regard to the combination of calcium oxide or calcium hydroxide with a zinc salt and an organotin compound. As a result, Sugahara, taken alone, does not render the claimed subject matter obvious.

Consequently, Applicant respectfully traverses the Examiner's contention that "each of these patents shows applicant's instantly claimed ingredients."

A combination of Ejk and Sugahara also does not render the claimed subject matter obvious. Taking into account the teaching of Ejk with regard to a combination of zinc oxide and an organotin compound, the skilled person would have either refrained from using zinc oxides like those suggested by Sugahara in column 11, lines 3 to 7, or would have refrained from the use of organotin compounds as suggested in column 13, lines 37 to 43. In other words, there is no suggestion or motivation, in the references themselves or in the knowledge generally available, to modify the references or to combine reference teachings because Ejk teaches away from using zinc salts. The skilled person would not have reasonably expected the combination of these two compounds to succeed. Again, with regard to the teaching of Ejk, a skilled person would have expected to arrive at a stabilizer combination which would accelerate the decomposition of his halogen-containing polymer for the reasons stated above. This is certainly a result that one of skill in the art would try to avoid.

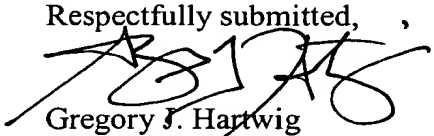
Consequently, independent claim 14 is allowable. Reconsideration and allowance of claim 14 are respectfully requested.

Claims 15-23 and 27-29 depend from allowable claim 14, and are therefore allowable. These claims may also contain additional patentable subject matter for reasons not stated herein. Allowance of these claims is respectfully requested.

CONCLUSION

In view of the foregoing, reconsideration and allowance of claims 14-23 and consideration and allowance of claims 27-29 are respectfully requested. Should any issues remain that preclude the allowance of the application, the Examiner is strongly encouraged to contact the undersigned by telephone.

Respectfully submitted,



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ABSTRACT

~~The invention relates to a stabilizer combination for halogen-containing thermoplastic resins, encompassing:~~

~~a) calcium oxide and/or calcium hydroxide, where these, where appropriate, have been surface-modified;~~

~~b) at least one tin compound of the general formula (I)~~

~~$R_nSn(X\text{-}R')_{4-n}$ (I)~~

~~where~~

~~n is 1 or 2;~~

~~each of the groups R, which may be identical or different, is a straight-chain or branched alkyl group having from 1 to 22 carbon atoms;~~

~~each of the groups X, which may be identical or different, is -S- or -O-; and~~

~~each of the groups R', which may be identical or different, is a straight-chain or branched alkyl group having from 1 to 22 carbon atoms, or a -$[C(O)]_m$-L-C(O)-O-R" group or a -$[C(O)]_m$-L-O-C(O)-R" group, where m is 0 or 1, -L- is a divalent connecting group which is selected from alkylene groups having from 1 to 4 carbon atoms, or a vinylene group, and R" is an alykl group having from 1 to 22 carbon atoms; or~~

~~two (X-R') groups may have bonding to one another to form a heterocyclic ring of the formula (I') or (I")~~

~~where L is as defined above; and~~

~~c) at least one zinc compound selected from liquid and solid zinc salts of saturated, unsaturated, straight-chain, or branched mono- or polyfunctional aromatic or aliphatic carboxylic acids, zinc oxide and zinc hydroxide;~~

~~with the proviso that no perchlorate is present in the stabilizer combination.~~

~~The stabilizer combination of the invention is suitable for stabilizing PVC, in particular rigid PVC (UPVC). UPVC stabilized using the stabilizer combination of the invention has high thermal stability and excellent weathering resistance, and is particularly suitable for the outdoor sector.~~

A stabilizer combination for weathering-resistant-halogen-containing thermoplastic resin compositions, in particular those based on polyvinyl chloride (or PVC) is described, encompassing calcium chloride and/or calcium oxide with a particle size of not more than 200 μm, an organotin compound and at 1east one zinc compound selected from liquid and solid zinc salts of saturated, unsaturated, straight-chain, or branched mono- or polyfunctional aromatic or aliphatic carboxylic acids, zinc oxide and zinc hydroxide, which contains no perchlorate.